

Appl. No. 10/743,641
Amdt. Dated September 25, 2006
Reply to Office action of March 23, 2006

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REMARKS/ARGUMENTS

This communication is responsive to the Office Action dated March 23, 2006. The claims have been amended to address several of the indefiniteness rejections made by the Examiner. Further, the second occurrence of claim 43, and claims 44-54 have been renumbered as 44-55, respectively; to address a typographical error where there were two claim 43's in the application. As such, claims 1-55 are currently pending.

The Office Action

In the Office Action of March 23, 2006, the Examiner made the following rejections:

Claims 1-54 were rejected under 35 U.S.C §112, second paragraph, as being indefinite.

Claims 1, 4, 5, 11-13, 16 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Hirano et al (U.S. Patent No. 5,028,495).

Claims 1, 4, 5, 11-13, 16 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Jha et al (U.S. Patent No. 5,553,770).

Claims 1-3, 7, 8, 10, 11-13, 16, 19, 20, 22, 25, 26, 29 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Mennucci (U.S. Patent No. 5,761,799).

Claims 1, 4, 5, 10, 11-16 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Galasso et al (U.S. Patent No. 4,034,454).

Claims 1-30, 34-45, 48, 49 and 52-54 were rejected under 35 U.S.C §102 (b) as being anticipated by Hirano et al (JP 4-006173).

Claims 1-13, 19-30 and 34-36 were rejected under 35 U.S.C §103(a) as being unpatentable over Ryan (U.S. Patent No. 4,725,509).

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Claims 1-3, 7, 8, 10, 11-13, 16, 19, 20, 22, 25, 26, 29 and 34 were rejected under 35 U.S.C §103(a) as being unpatentable over Mennucci et al (U.S. Patent No. 6,022,426).

Claims 33, 46, 47, 50 and 51 were identified as being allowable.

The Rejections Under 35 U.S.C §112

Claims 1-51 were rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear what distinguished a "strip" from a "foil".

The Applicant would like to point out that at paragraph no. 46 of the specification, the definitions for "strip" and "foil" are given. Moreover, the same examiner found these terms to be clear in the parent application which has issued as U.S. Patent No. 6,722,002. Because these terms are clearly defined in the specification and have been found acceptable terminology in the parent application, withdrawal of the rejection is respectfully requested.

Claims 2-7 were rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that the term "commercially pure" is unclear since it can change over time. In response thereto, Applicants submit that the materials used in the invention are to be as pure as whatever is commercially available. Should higher purity materials become available than what was known at the time of the invention, then those materials would be preferred over what was commercially available at the present time and would work just as well as the presently available commercial materials.

Claim 12 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear why the claim depended from claim 15. In response thereto, claim 12 has now been amended to depend from claim 11. Further, claim 12 has been amended to recite "one of said

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first or second layers" to address the examiners antecedent basis concern.

Claims 13 and 16 were rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear whether the claim recited a product by process limitation. Applicants submit that the claims do recite a product by process limitation.

Claim 15 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that claim 15 depended on itself. Claim 15 has now been amended to depend from claim 14. Further, claim 15 has been amended to recite "one of said first or second layers" to address the examiners antecedent basis concern.

Claim 26 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear whether the titanium layer is considered one of the "any adjacent metallic layer". Applicants have now amended claim 26 to specifically include "titanium layer" in the layered materials.

Claim 31 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that the terms "CDA102Cu" and "201Ni" were commercial designations whose meanings were indefinite since they were subject to change. Applicants have now amended claim 31 to recite that the copper and nickel are "commercially pure". As indicated previously, the term "commercially pure" is definite as it is intended to encompass material that is the purest that is commercially available.

Claim 32 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear as to when the roll bonding was to occur. Claim 32 has been amended to recite that the first layer is roll bonded to the second layer and "then" cold rolled.

Claim 33, 46, 47, 50 and 51 (claims 46, 47, 50 and 51 have been renumbered as claims 47,

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48, 51 and 52) were rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear whether the numerical designations were indicative of weight percentages. Applicants submit that the numbers are a well known and art accepted way of designating weight percentages of materials in this technology.

Claim 34 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear whether the claimed layer is to be disposed on all sides of the core. Claim 34 has now been amended to recite "a" covering layer. Moreover, applicants submit that the covering layer can be disposed on all sides of the core.

Claims 34 and 36 were rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear what the antecedent basis was for "said covering layer". In response thereto, claim 34 has been amended to recite "a" covering layer.

Claim 41 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear whether the product by process limitation was performed prior to assembling the laminate. In response thereto, Applicants have amended claim 41 to recite that the process step occurs "prior to assembling the brazing strip or foil".

Claim 42 was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear what was meant by "the other of copper and nickel". Applicants submit that the terminology is clear. When, for example, the first metallic layer is "copper", then the third metallic layer is "nickel" (which is the "other" of the two not used for the first layer). Likewise with the material for the forth and sixth layers. Applicants believe this is clear and definite.

Claim 45 (now renumbered as claim 46) was rejected under 35 U.S.C §112, second paragraph, as the examiner indicated that it was unclear whether the term "any adjacent layer"

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included the core. Since the core can be an "adjacent layer" then it is included. Applicants have amended claim 46 to recite "including said core".

Applicants believe that the above comments and amendments fully address the rejections under 35 U.S.C §112, second paragraph. Reconsideration and withdrawal of the rejections are therefore respectfully requested.

The Rejections Under 35 U.S.C §102(b) and 35 U.S.C §103 (a)

Claims 1, 4, 5, 11-13, 16 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Hirano et al (U.S. Patent No. 5,028,495). Further, claims 1, 4, 5, 11-13, 16 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Jha et al (U.S. Patent No. 5,553,770). Also, claims 1, 4, 5, 10, 11-16 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Galasso et al (U.S. Patent No. 4,034,454).

Applicants would like to address the above three references of Hirano et al, Jha et al and Galasso et al as all three references require a heat treatment step of the material. The products of the invention which result from a cold rolling process without any intermediate heat treatment step are not the same as those produced from processes which utilize a heating step.

Specifically, roll bonding of metal layers to Ti (and/or Zr) requires cold working and thus hardens the strip. It is common metal working practice to put the cold worked strip through an annealing process to soften it up for any further cold rolling. The annealing requires time at elevated temperatures and usually requires a protective atmosphere to avoid forming surface scales. The annealing process conditions that is likely to apply to the strip have two problems that will cause strip to become brittle and is not able to be further cold rolled to the foil gauge for brazing filler

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application. The time and temperature will cause interdiffusion between Ti/Zr and Cu/Ni layers. The resultant intermetallic compounds between Ti/Zr and Cu/Ni are extremely brittle and will crack between layers under the cold rolling condition. The second issue is the gas used as the protective atmosphere. The commonly used gas is either nitrogen or hydrogen or a mixture of nitrogen and hydrogen, which will be absorbed into the Ti/Zr and cause embrittlement. This will also render the strip unworkable. In summary, there are many metallurgical reasons that this clad strip can not be processed with conventional rolling and annealing practices. On the other hand, by cladding layers to the surfaces of Ti or Zr without an intermediate heating step, we are able to roll the clad strip to far more thickness reduction than what is possible on the Ti or Zr by itself and produce materially different materials than those made when clad with materials using an intermediate heating step.

In view of the above, the references of Hirano et al, Jha et al and Galasso et al do not teach the material of the invention as the heating steps used to prepare these products result in a clad material which is not the same as the claimed material which is made by a process which does not include any intermediate heating. As such, Hirano et al, Jha et al and Galasso et al do not anticipate the designated claims and the rejections should be withdrawn.

Claims 1-3, 7, 8, 10, 11-13, 16, 19, 20, 22, 25, 26, 29 and 34 were rejected under 35 U.S.C §102 (b) as being anticipated by Mennucci (U.S. Patent No. 5,761,799).

The process of Mennucci et al requires inclusion of platinum stripes (item no 15) to the surface of a copper layer which is to be bonded to a titanium base material. No such platinum stripes are present in the material of the invention. As such, the material of Mennucci et al is not the same as the material of the invention. Accordingly, the rejection of claims 1-3, 7, 8, 10, 11-13, 16, 19, 20, 22, 25, 26, 29 and 34 as being anticipated by Mennucci et al should be withdrawn.

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Claims 1-30, 34-45, 48, 49 and 52-54 were rejected under 35 U.S.C §102 (b) as being anticipated by Hirano et al (JP 4-006173).

With respect to Hirano et al (JP), no mention is made of any metallic bond being present between layers, muchless that the bond was formed solely by cold rolling the materials together without any intermediate heating step. As discussed above, materials of the invention which contain a Ti or Zr core material which are produced without the intermediate heating are materially different from those produced in a process which utilizes some heating. While Hirano teaches "coating" a Zr base with a special Cu/Ti/Ni-Cu composite, no mention of how the material is attached or whether any metallic bond is present is identified. Further, no mention of the absence of any heat treatment is made. Moreover, the claims of the invention require only one core, either Zr, Ti or a blend of Zr and Ti. The material of Hirano et al has a Zr core and then a material having a second Ti "core" (the Cu/Ti/Ni-Cu) material. This is not the same as the invention. As such, Claims 1-30, 34-45, 48, 49 and 52-54 are not anticipated by the Hirano et al (JP) reference.

Claims 1-13, 19-30 and 34-36 were rejected under 35 U.S.C §103(a) as being unpatentable over Ryan (U.S. Patent No. 4,725,509).

Ryan is concerned with formation of a brazing material having a particular composition of Cu, Ni and Ti. Ryan is not concerned with how the material is achieved and indicates several alternative approaches without distinction as to any preferred method (electroplated materials, electrodeposited materials, physical deposition, chemical deposition, homogenous alloys of the materials, etc). As such, there is simply no motivation in Ryan to create the cold roll bonded materials which are produced without any intermediate heat treatment step and achieve the materials of the invention which have materially different properties from those produced by other methods

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(as discussed in detail above). Absent such motivation, Ryan fails to render the invention obvious to a person of ordinary skill in the art as the person of ordinary skill in the art, on reading Ryan, would not be motivated to make a cold rolled brazing foil or strip without any intermediate heating step and expect the material so produced to have materially different properties from material having the same composition produced by any one of the other disclosed methods of Ryan. As such, withdrawal of the rejection is respectfully requested.

Claims 1-3, 7, 8, 10, 11-13, 16, 19, 20, 22, 25, 26, 29 and 34 were rejected under 35 U.S.C §103(a) as being unpatentable over Mennucci et al (U.S. Patent No. 6,022,426).

Mennucci discloses a specific process for cladding materials wherein oxygen rich copper material is first clad to oxygen free copper and then slitting that material, profiling grooved sections of the material, finish slitting the material, tension leveling the material, stamping the material into selected configurations, cleaning the material and the annealing the material so produced to a core. Initially, applicants would like to point out that the copper material used in the invention does not undergo any of the treatment steps required by Mennucci. Moreover, the copper material of the invention is not annealed to the core but is cold rolled without any intermediate heat treatment. As indicated above, the cold rolling without heat treatment, such as annealing, produces a clad product which is materially different from a clad product having a Ti or Zr core which is made using a heat treatment step. As such, there is simply no motivation in Mennucci to produce the clad products of the invention. Accordingly, withdrawal of the rejection is respectfully requested.

Conclusion

In consideration of the foregoing analysis, it is respectfully submitted that the present

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application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 34180US2.

Respectfully submitted,

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